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## A New Species Closely Related to *Phorbia fascicularis* TIENSUU (Diptera, Anthomyiidae)

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**Abstract** *Phorbia subfascicularis*, sp. n., is described on the basis of material from Japan, Korea and Sweden. It was once misidentified as *Phorbia fascicularis* TIENSUU by SUWA (1974, 1983), having a peculiar tuft of long setae on the male cercal plate as seen in the latter, from which it is distinguishable by the male terminalia with different details. *P. fascicularis* sensu FAN *et al.* (1988) may also be referable to the present new species. In the new species are recognized two forms, which are, however, treated as mere variants.

**Key words:** Anthomyiidae; *Phorbia*; new species; trans-Palearctic distribution.

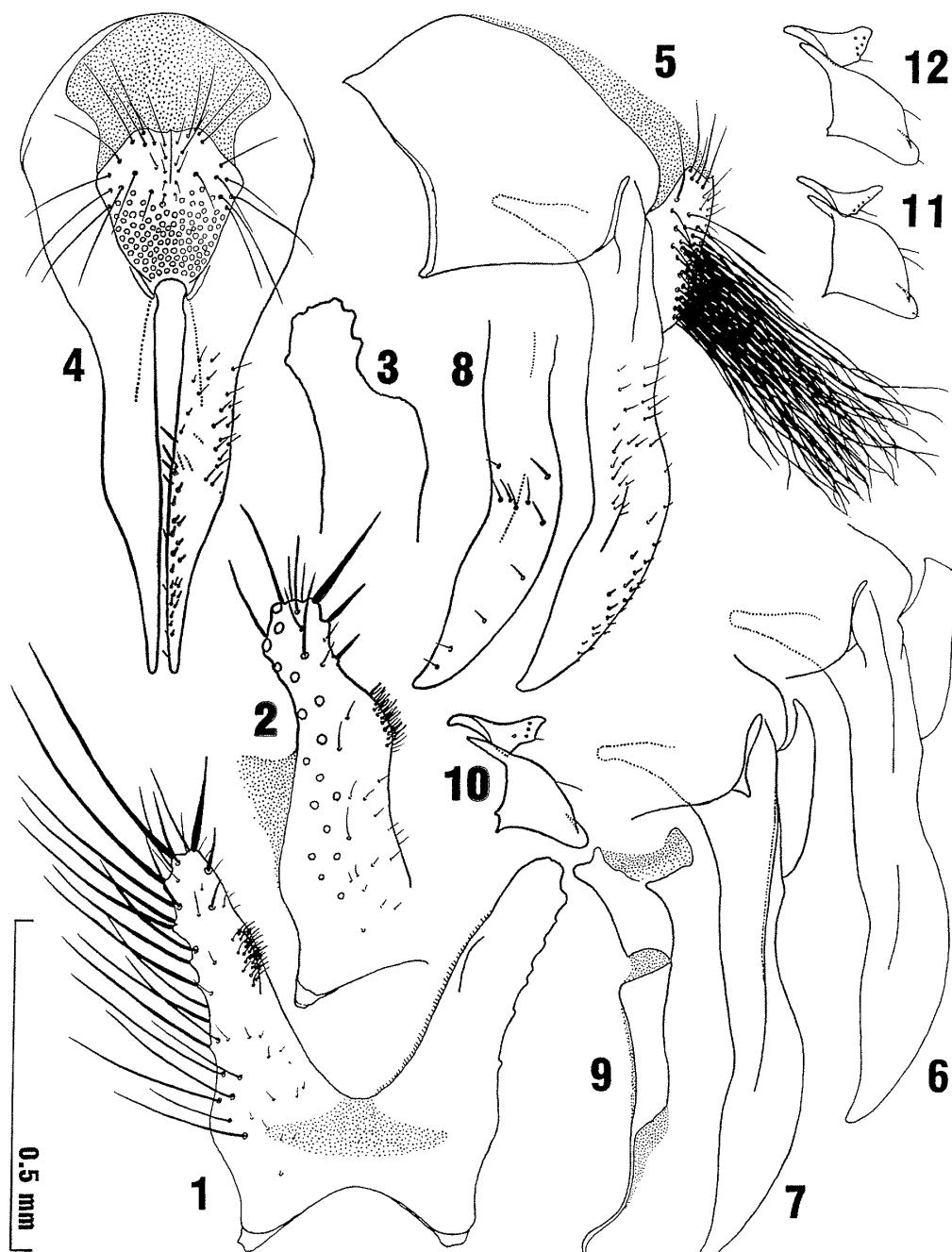
*Phorbia fascicularis* TIENSUU, 1936, is a small species peculiar in having a tuft of long setae on the cercal plate of the male terminalia. I formerly examined some small Japanese and Korean flies of *Phorbia* possessing such a cercal plate and identified them with the species (SUWA, 1974, 1983). Recently I have had the opportunity to examine two male specimens of *Phorbia*, one from Siberia and the other from Europe, which were determined as *fascicularis* by D. M. ACKLAND and by V. MICHELSEN respectively. Comparisons with them have revealed that the Japanese and the Korean specimens belong to an undescribed species, which occurs also in China and Sweden as shown later. In the new species are recognized two forms, which are, however, tentatively concluded as mere variants of one and the same species.

### *Phorbia subfascicularis* sp. nov.

(Figs. 1–20)

“*Phorbia fascicularis* TIENSUU”: SUWA, 1974: 178; SUWA, 1983: 40; FAN *et al.*, 1988: 136.

Type material. Japan. Form A. Honshû: –Yamanashi-ken: Mt. Daibosatsu, 1700–2000 m, 5♂ (one the holotype), 16–18. v. 1982, M. SUWA; Kanayama, Matsutomi, 1♂, 26. v–4. vi. 1975, T. SAIGUSA *et al.*; –Tôkyô-to: Higashi-Murayama, 1♂, 7. iv. 1967, T. KOCHA; Mt. Usuki, Nishitama-gun, 1♂, 26. v. 1967, T. KOCHA; –Saitama-ken: Yorii, 2♂, 17. iv. 1977, K. HARA; Hannô, 1♂, 2. v. 1968, H. TAKIZAWA; Koma, near Hannô, 10♂, 10. iv. 1975, H. KURAHASHI. Form B. Honshû: –Nagano-ken: Mt. Kiso-Komagatake, 3♂, 25. vii. 1970; Mt. Senjô, 2♂, 10. vii. 1971; –Toyama-/Niigata-ken: Asahi-dake, 2000–2400 m, 3♂, 21–22. vii.



Figs. 1-12. *Phorbia subfascicularis* sp. n., Form A, ♂ terminalia. 1, 5th sternite, ventral view; 2-3, ditto, ventrolateral view; 4, hypopygium, dorsal view; 5-7, ditto, lateral view (slightly ventral in Fig. 7); 8, right surstylius, inside view; 9, basiphallus and distiphallus; 10-12, pregonite and postgonite. Paratypes from Masutomi (1-2, 4-5, 8-10), Daibosatsu (3; 6-7, 11), and Yorii (12).

1989; -Gifu-ken: Wasabidaira-Kagamidaira, 1500–2000 m, near Mt. Kasagatake, 1 ♂, 14. vii. 1989; -Yamanashi-ken: Mt. Kitadake, 2500–2800 m (Kusasuberi), 4 ♂, & 2800–3190 m, 1 ♂, 5–8. vii. 1989; all collected by myself. Korea. Kangweon: Odae-san, 1300–1550 m, 11 ♂, 29–30. v. 1982; Seolag-san, 1000–1300 m, 1 ♂, 24–27. v. 1982; all collected by myself. Sweden. Jämtland: Undersåker, 1 ♂, 3. vii. 1925, RINGDAHL collection; -Torne Lappmark: Abisko, 1 ♂, 1. vi. 1974, B. G. SVENSSON. Five paratypes from Japan (Koma) are deposited in the KURAHASHI collection, National Institute of Health, Tōkyō, 2 paratypes from Japan (Daibosatsu and Kitadake), 1 paratype from Korea (Odae-san) and the 2 paratypes from Sweden preserved under the care of V. MICHELSEN, University of Copenhagen, and the rest in Systematic Entomology, Hokkaidō University.

This species is described from the male alone. Much resembling *Phorbia fascicularis* TIENSUU (Figs. 21–27), from which it mainly differs in some details of the terminalia as follows: -Cercal plate distinctly longer than wide (the plate in *fascicularis* rounded in the specimens examined, though sometimes approaching to the outline observed in the present new species, after MICHELSEN, in litt.); surstyli with sparser and shorter setae on dorsolateral area medially, hardly convex there, with some setulae scattered on dorsal surface near base, and with weaker inside setae.

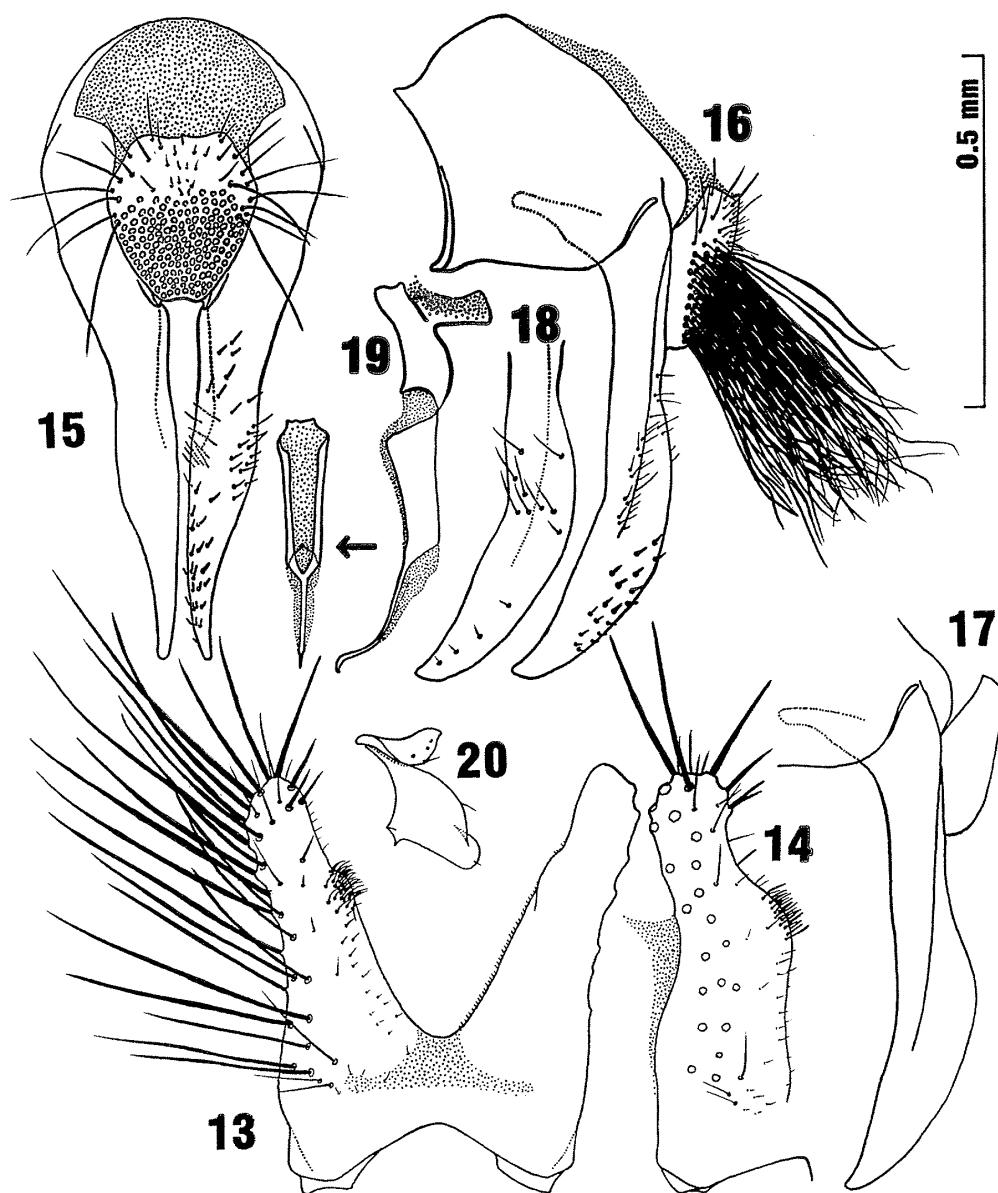
Full description will be given as follows:

*Japanese material.* Two forms, Form A and B, are recognized on the basis of some differences and especially characteristic in the outline of surstyli.

Form A (Figs. 1–12). Wing-length (exclusive of epaulet) 3–4.1 mm. Body and appendages blackish in ground colour. Orbita (parafrontals and parafacials) silvery or whitish grey pollinose; cheeks hardly to slightly tinged with brown in pollinosity. Mesonotum hardly to a little tinged with brown in pollinosity, with weak to rather distinct brownish pollinose vittae usually discernible along rows of primary setae especially on postsutural area, the median vitta being broadened posteriorly to unite with the vittae on *dc*-rows. Abdomen hardly to slightly tinged with brown or purple in pollinosity, when viewed from front with a brownish pollinose median vitta obscurely or distinctly discernible, and when viewed from behind narrowly to rather broadly blackish medially. Wings tinged with brown to dark brown, strongly at base; calyptera whitish, slightly tinged with yellow marginally.

Frons 1.3–1.8 times as wide as anterior ocellus; interfrontalia narrower than anterior ocellus, often less than half the diameter of the latter, with *if* distinct, sometimes strong; parafrontals with 3–6 *ori* and 1 short *ors* (below the primary *ors* one minute setula appearing in 2 specimens);  $A_3$  (3rd antennal segment) 1.4–1.7 times as long as wide; orbits at parafrontal angle slightly narrower to a little wider than  $A_3$ ; cheeks about as high as orbital width at parafrontal angle in most specimens; epistoma situated behind tip of parafrontal angle.

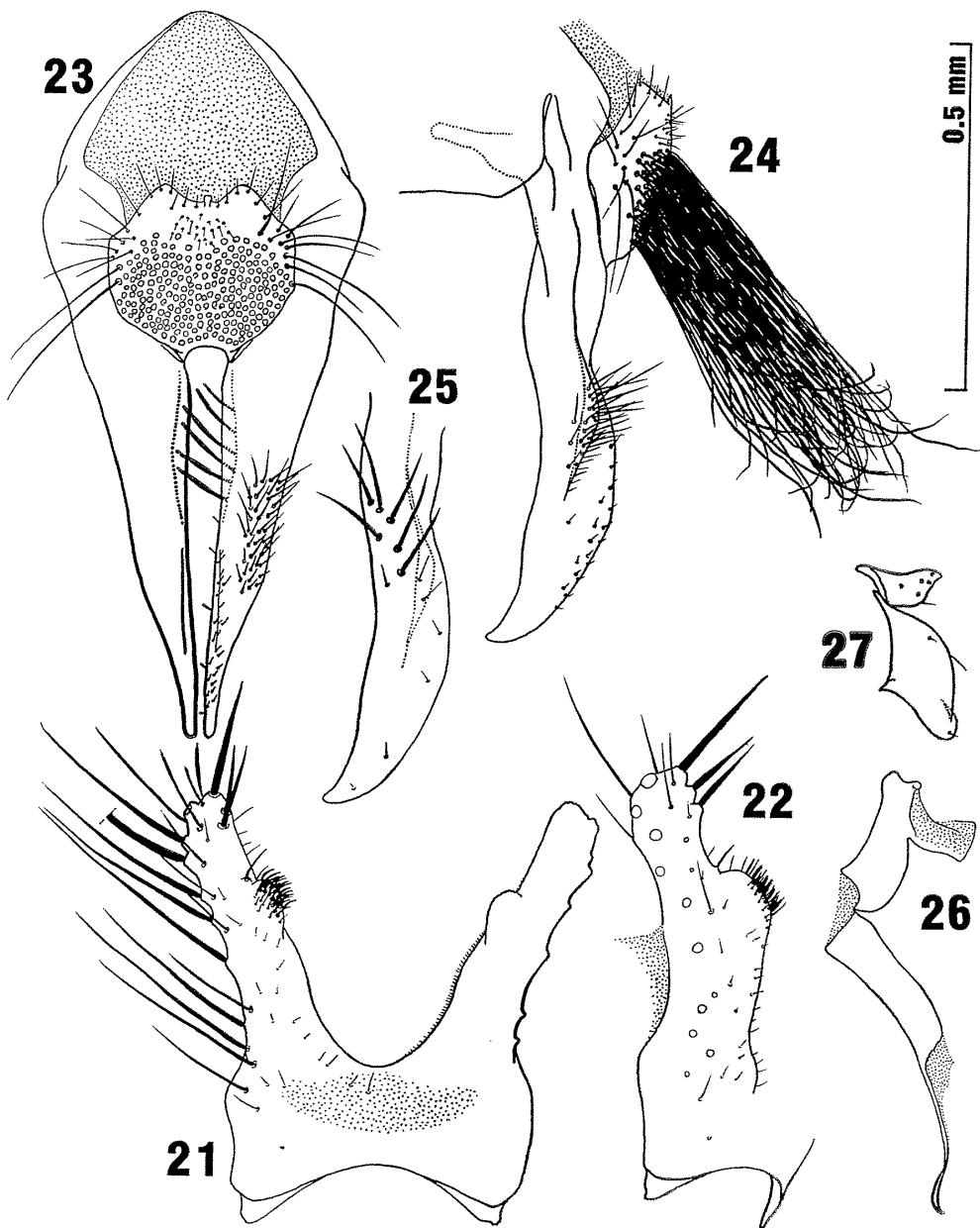
Mesonotum with 4–7 *pre-acr* in 2 approximated rows; 2nd (lower or lateral posterior in some authors) *ph* usually absent, if present very fine; *pra* as long as or



Figs. 13–20. *Phorbia subfascicularis* sp. n., Form B, ♂ terminalia. 13, 5th sternite, ventral view; 14, ditto, ventrolateral view; 15, hypopygium, dorsal view; 16–17, ditto, lateral view; 18, right surstyli, inside view; 19, basiphallus and distiphallus; 20, pregonite and postgonite. Paratypes from Kiso-Komagatake (13–16, 18–20) and Kusasuberi (17).

a little longer than anterior *ntpl*, rarely shorter than the latter; mesopleura with no strong anterior *mpl*, and usually with no associated setulae around *pstg*; *stpl* 1: 2, if 1: 3, the lowest posterior much weaker than the uppers; scutellum bare ventrally.

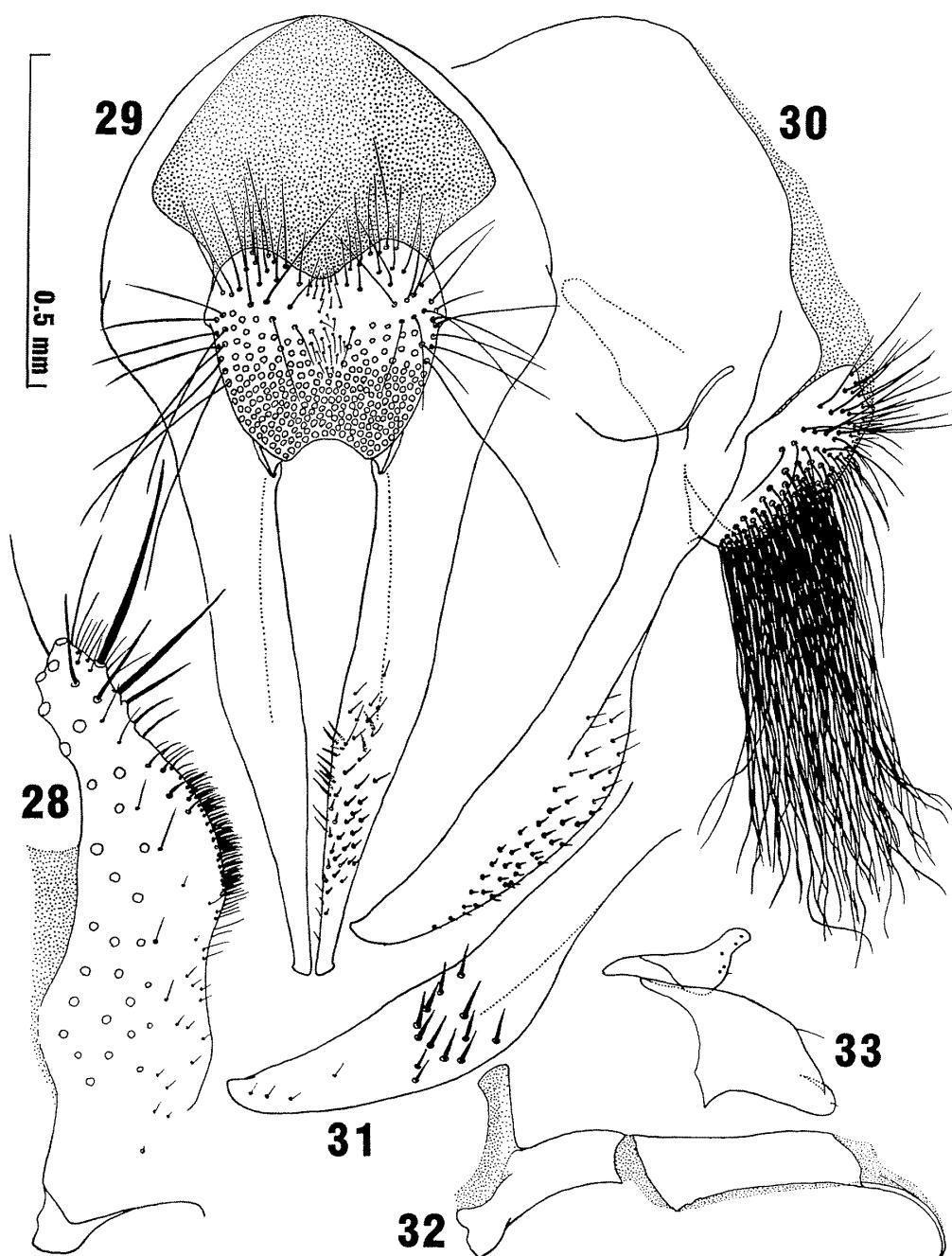
Abdomen with terminalia as in Figs. 1–12; 5th sternite variable in depth of subapical concavity between apex and setose expansion on inner margin of each process (Figs. 2–3); pregonite and postgonite somewhat variable in outline (Figs.



Figs. 21–27. *Phorbia fascicularis* TIENSUU, ♂ terminalia. 21, 5th sternite, ventral view; 22, ditto, ventrolateral view; 23, hypopygium, dorsal view; 24, ditto, lateral view; 25, right surstylos, inside view; 26, basiphallus and distiphallus; 27, pregonite and postgonite. Near Irkutsuk.

10–12), pregonite with 1 distinct median setula (unusually 2 in Fig. 11) and 1 minute and fine apical setula (unusually absent in Fig. 10), the latter hardly discernible unless carefully examined.

Mid femur with *av* more or less developed on basal half to two-thirds, rarely on whole length, 1 or a few setae on median third usually well developed and strong,



Figs. 28–33. *Phorbia penicillaris* (STEIN), ♂ terminalia. 28, 5th sternite, ventrolateral view; 29, hypopygium, dorsal view; 30, ditto, lateral view; 31, right surstyli, inside view; 32, basiphallus and distiphallus; 33, pregonite and postgonite. Denmark.

and with some strong *pv* on basal half to two-thirds, setae near base weaker than the others;  $f_3$  with a row of *av* (a few near base much weaker), and with 1 or a few weak to rather strong *pv* near base and a few or some strong *pv* on median third;  $t_1$  with, or often without, 1 *ad*, and with 1 or sometimes 2 *pv*;  $t_2$  with 1 or sometimes

no (rarely 2) *av*, 1 *ad*, 2 or sometimes 3 (rarely 1) *pd* and 2 *pv*; *t<sub>3</sub>* with 3–4 (rarely 2 or 5) *av*, 4–5 *ad*, 3–5 *pd* and 1–6 *pv*. Wings with costal thorns distinct, a little shorter to a little longer than *h*-vein (measured on outer margin); costa setulose ventrally near lower row of spinules, which are shorter than twice the costal width; posterior cross-vein (*dm-cu*) slightly oblique to medial vein and straight or only a little sinuate.

*Form B* (Figs. 13–20). Differing from *Form A* as follows:

Wing-length 3.1–3.7 mm. A little darker in pollinosity: orbits hardly to slightly tinged with brown; cheeks faintly to rather distinctly tinged with brown; mesonotum and abdomen distinctly tinged with brown, with brownish vittae scarcely differentiated. Wings tinged with dark brown; calyptae slightly tinged with yellow to brown marginally.

Frons 1.6–2.3 times (usually twice) as wide as anterior ocellus; interfrontalia as wide as or a little wider, rarely a little narrower, than anterior ocellus, with *if* weak to strong, and often with a single or paired additional setulae discernible. Abdomen with terminalia as in Figs. 13–20; cercal plate with apical part less concave in dorsal view and truncated in lateral view; surstyli near cercal plate with narrower profile.

Mid femur with *pv* near base often much weakened; *t<sub>1</sub>* with no *ad* and 1 *pv*, the latter sometimes lacking; *t<sub>2</sub>* with 1 (rarely 2) *av*, 1 *ad*, 2 (sometimes 1) *pd* and 2 (rarely 3) *pv*; *t<sub>3</sub>* with 3–4 (sometimes 5) *av*, 3–5 *ad*, 3–4 (rarely 5) *pd* and 1–6 *pv*.

*Korean material.* It is referred to *Form A*, agreeing well with the Japanese material. Wing-length 3.3–4.2 mm. Frons up to 1.5 times as wide as anterior ocellus; interfrontalia less than half as wide as anterior ocellus. Fore tibia usually with no *ad*.

*Scandinavian material.* It is referred to *Form B*, differing from the Japanese material only in a few aspects. Paler in pollinosity; wing 3.3 mm in length, with costal spinules more prominent; *t<sub>1</sub>* with a well-developed *ad*; surstyli with inside setae situated a little more distally.

*Distribution.* Japan (Honshû); Korea; NE China; Sweden.

*Remarks.* No stable differences between the two forms are found except in the width of frons and in the outline of surstyli in profile, after all. FAN *et al.* (1988) recorded *Phorbia fascicularis* from Heilongjiang, NE China. Judging from the genital structures of the species figured by them, it may be referable to *subfascicularis* and to *Form A*. The two forms of this species may widely be distributed in the Palearctic region, though they have not yet been collected together at any localities (Fig. 34). The possibility can not be ruled out that the differences are associated with environmental factors. In fact, *Form A* has been found below an altitude of 2000 m and *Form B* mostly above 2000 m in central Honshû, Japan. Because the differences are rather trifling, it may be reasonable to treat the forms as variants of a single species unless further information on the forms from various localities indicate the necessity of another treatment.

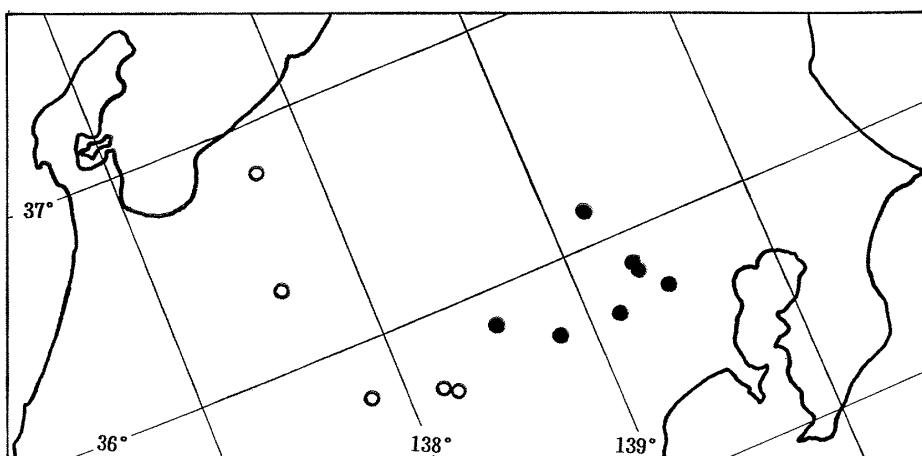


Fig. 34. Distribution map of *Phorbia subfascicularis* sp. n., Form A (●) and Form B (○), in central Honshū, Japan.

A tuft of numerous long setae on the cercal plate is also seen in *Phorbia penicillaris* (STEIN, 1916) known from Europe and N. America. The male terminalia of the species (Figs. 28–33, based on a specimen from Denmark) obviously show its close relationship with *fascicularis* and *subfascicularis*, though clearly different from those of the latter 2 species in details: –5th sternite with processes less concave near apex on inner margin; surstyli not setose on dorsolateral area medially; distiphallus with a shorter acrophallus. *P. penicillaris* is quite different also in other external features (size, chaetotaxy, etc.).

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